

factory that a brief description of the method illustrated by a photograph ( $\times 10$ ) (Fig. 1) of one of them may prove of interest. The lines, 20 microns wide, ruled with a special diamond, carefully set to ensure a single, even, symmetrical line were graduated directly on the invar tape after a small section of the tape had been polished. Owing to various characteristics of invar tapes it is found difficult by the use of the ordinary methods to obtain a good line at the edge

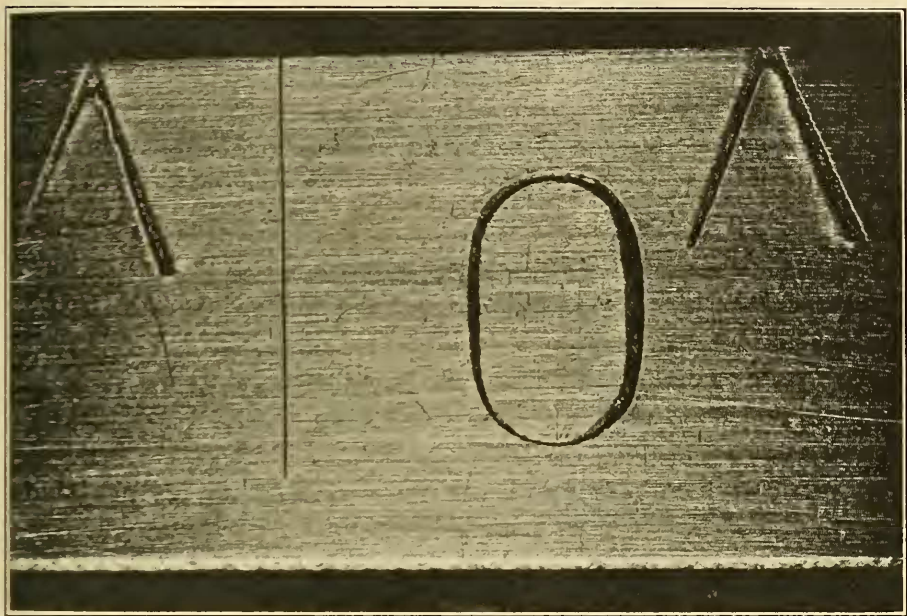


Fig. 1. Photograph of ruling on tape. Magnified 10 diameters.

of the tape. This difficulty has been overcome, however, by filing off the edge of the tape, after the lines had been ruled. A specially constructed template was used in order to take off a very small amount and yet enough to cut off the broadened end of the line. The edge of the tape used in measurements is then smooth, and perpendicular both to the surface of the tape and to the line.

BOTANY.—*A new species of Panicum found in alfalfa seed.* AGNES CHASE, Department of Agriculture.

In the course of his work in seed investigation Mr. F. H. Hillman of the U. S. Department of Agriculture found *Panicum* seeds [fruits] in samples of alfalfa seed from the middle western states that did

not agree with those of any species described and figured in the *Revision of Panicum* by Hitchcock & Chase.<sup>1</sup> The fruits and the spikelets found indicated some species of the *Capillaria* group, though the pronounced scar at the base of the fruit suggested *P. filipes* Scribn., of the allied perennial group *Diffusa*. Mr. Hillman and the writer examined all likely species in the Grass Herbarium without finding the fruits sought. The spikelets resembled most closely those of *Panicum barbipulvinatum* Nash, so Mr. Hillman began a systematic examination of specimens of this species from the Middle West and found the fruit with the pronounced basal scar in a plant from Bucklin, Kansas, collected by A. S. Hitchcock in 1892. After that the writer examined all the rest of the material referred to *P. barbipulvinatum* and found six more plants. The seven resemble each other closely, and differ from typical *P. barbipulvinatum* in that they do not have short flowering branches from the base. *Panicum barbipulvinatum*, however (even with these seven segregated from it) is so variable in habit that these seven could not be excluded on their general appearance alone. They differ chiefly in the stouter culms, firmer foliage, stiffer panicle branches with the lateral spikelets on shorter more appressed pedicels, in the well-developed sterile palea, and especially in the larger darker fruit, with a prominent lunate scar at the base.

The discovery of a hitherto unrecognized species by its seed emphasizes the taxonomic value of seed characters. It also goes to show that the differentiation of closely allied species, instead of being of "no practical value," as is sometimes alleged, may be of great importance in applied botany. The eight native species of the *Capillaria* recognized in the Revision, together with *P. tuckermanii* Fern.<sup>2</sup> (the New England form included in *P. philadelphicum* Bernh. in the Revision) and the species discovered by Mr. Hillman, are so closely interrelated that we have sometimes been doubtful whether they are really distinct. *Panicum barbipulvinatum*, in particular, we have regarded as doubtfully distinct from *P. capillare*. Yet in his work Mr. Hillman recognizes this species from the size and shape of its seed, and also an additional form we failed to distinguish.

The mature spikelets and fruits, as found in alfalfa seed, are plumper than those of herbarium specimens. Species of *Panicum* drop their fruits so readily that in collecting plants with fully mature seed most of the spikelets are lost. In a forthcoming paper by F. H. Hillman

<sup>1</sup> Contr. U. S. Nat. Herb. 15. 1910.

<sup>2</sup> Rhodora 21: 112. 1919.

and Helen H. Henry on *Incidental seeds found in alfalfa and red clover* (to be published by the U. S. Department of Agriculture) the spikelets and ripe fruits of the species of the *Capillaria* group are figured from several view points, showing differences in contour.

*Panicum hillmani* sp. nov. Plants annual, in tufts of 1 to 6 flowering and 1 to 3 or 4 sterile culms, 18 to 35 cm. tall, erect or recumbent at base, the lower nodes geniculate; culm papillose-pilose below the panicle and below the nodes, otherwise glabrous; sheaths mostly longer than the internodes, papillose-hispid; ligule membranaceous-ciliate, about 2 mm. long; blades erect or slightly spreading, firmer in texture than common in those of *P. barbipulvinatum*, 7 to 13 cm. long, 3 to 10 mm. wide, papillose-hispid beneath, pilose, sometimes sparsely so, on the upper surface; panicle short-exserted at maturity, 10 to 17 cm. long, as broad or broader, less than half the entire length of the plant, the main axis pilose, the prominent pulvini hispid, the branches stiffly spreading, mostly pilose toward the base, the secondary branches spreading at a narrow angle, the ultimate branchlets and pedicels appressed, scabrous; spikelets reddish or brownish at maturity, 2.5 to 3 mm. long, 1 mm. wide, turgid, acuminate; first glume about two-fifths the length of the spikelet, pointed, 3 to 5-nerved, the midnerve minutely scabrous toward the apex; second glume and sterile lemma equal, much exceeding the fruit, 7 to 9-nerved, the nerves minutely scabrous toward the apex, the hyaline sterile palea more than half as long as its lemma; fruit at maturity olivaceous drab, 2 mm. long, 1 mm. wide, elliptic, with a prominent slightly raised lunate scar at the base. (Figure 1).

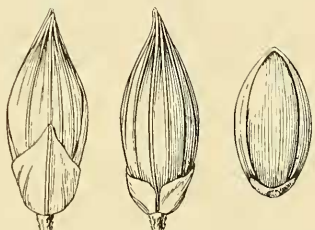


Fig. 1. *Panicum hillmani*, two views of spikelet and fruit.

Type in the U. S. National Herbarium no. 1,037,542, collected on "plain, Amarillo, Texas, August 11, 1918" by A. S. Hitchcock (no. 16206).

*Distribution:* Prairies and plains Kansas to Texas.

KANSAS: Bucklin, *Hitchcock* in 1892; Ulysses, *Thompson* 56.

OKLAHOMA: "Washita or Swanson Co." *Stevens* 1197.

TEXAS: Big Spring, *Hitchcock* 13367; Amarillo, *Hitchcock* 16206; Abilene,

*Tracy* 8295; Without locality, *Nealley* in 1889.

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## PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

### PHILOSOPHICAL SOCIETY OF WASHINGTON

#### 899th MEETING

The 899th meeting was held in the Cosmos Club Auditorium, March 22, 1924. It was called to order by President HAZARD with 40 persons present.

Program: CHARLES MOON: *Electrically controlled micrometers*. The paper was illustrated with lantern slides.